

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 99235	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/ES99/00278	International filing date (day/month/year) 27/08/1999	Priority date (day/month/year) 22/07/1999
International Patent Classification (IPC) or national classification and IPC C08L27/18		
Applicant DAVID SYSTEMS TECHNOLOGY, S.L. et al		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 3 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input checked="" type="checkbox"/> Certain observations on the international application 		

Date of submission of the demand 22/02/2001	Date of completion of this report 31.10.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Knutzen-Mies, K Telephon No. +49 89 2399 8525



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/ES99/00278

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-16 as originally filed

Claims, No.:

1-5 with telefax of 02/10/2001

Drawings, sheets:

1/1 with telefax of 17/10/2001

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:

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- the drawings, sheets:
5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c));
(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)
6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims
	No: Claims 1-5
Inventive step (IS)	Yes: Claims
	No: Claims 1-5

Industrial applicability (IA) Yes: Claims 1-5
 No: Claims

2. Citations and explanations
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

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ad section V.:

The most relevant prior art cited in the international search report and in the description of the present application is considered to be represented by the following documents:

D1 US-A-4 453 991

D2 JP13333.7.

D1 discloses solutions of perfluorinated copolymers suitable for ion exchange membranes containing $-SO_3M$ functional groups in a mixture of water and polar solvents. While the present formulation of claim 1 does not exclude the presence of water it has been stated that the crystallinity of a copolymer of equivalent mass ≥ 1000 would be 12% and the ratio of densities between the ionic and non-ionic form of the copolymer would range between 0.993 and 0.995 (see also page 5, lines 10 - 19 of the application), which would put the copolymer known from D1 outside the limitations of claim 1 of the present application. Since D1 does not contain an indication to modify the features mentioned above in the direction of the present invention, D1 does not suggest the composition, either. The subject matter of claims 1 - 5 therefore fulfils the requirements of Article 33(2) - (4) PCT with respect to D1.

No such statement has been made having regard to D2 which discloses perfluorinated TFE/vinyl ether copolymers containing $-SO_2F$ groups which on hydrolysis convert into $-SO_3M$ groups (suitable as ion exchange polymers) having an equivalent mass of 400 - 1000 and which are dissolved in polar organic solvents (see page 1, line 16 - page 2, line 13 of the present application).

Therefore, the subject matter of claims 1 - 5 is considered to be anticipated by D2 (Article 33(2) and (3) PCT).

The industrial applicability of the subject matter of claims 1 - 5 is given (Article 33(4) PCT).

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ad section VIII.:

The expression 'non-hydrated' (claim 1, line 12) has no basis in the content of the application as originally filed contrary to the provisions of Article 34(2)(b) PCT.

The expression 'perfluoro sulphate' in claim 2 instead of 'perfluoro sulphide' is also not based on the content of the application as originally filed (Article 34(2)(b) PCT). Apart from that, both terms are not correct having regard to the regulations put down by the IUPAC (sulfone = $>\text{SO}_2$, and the radical being sulfonyl = $>\text{SO}_2^-$).

The applicant's attention is drawn to the fact that, as a consequence of Rule 66.8(a) PCT the examiner is not permitted to carry out any amendments under the PCT procedure, however minor these may be.

10/048141
17 531 Rec'd PCT/PT 22 JAN 2002CLAIMS

1. Liquid composition which contains:

- 5 - An ionic exchange perfluorinated copolymer with MSO_3^- functional groups, where M can be hydrogen or an alkaline metal, with an equivalent mass greater than 900.
- A polar organic solvent or a mixture of one polar with another non-polar.

10 They are distinguished from other compositions in that the perfluorinated copolymer has a crystallinity of 2 to 10% and in that the ratio of the density of the exchange copolymer in the form indicated and that of the original non-hydrated and non-ionic copolymer is between 0.90 and 0.97.

15 The mass ratio of the composition varies between:

Copolymer	1 - 35%
Solvent	99 - 65%

20 2. Liquid composition according to claim 1 which contains a hydrolysed copolymer of tetrafluoroethylene with vinyl ether which contains perfluoro sulphate, with an equivalent mass between 1000 and 2600.

25 3. Liquid composition according to claim 1 in which the ionic exchange perfluorinated copolymer contains a hydrolysed copolymer of tetrafluoroethylene with vinyl ether and a third modifying monomer from among 2-perfluoro, 4-methylene, 4-methyl, 1-3 dioxolane and the vinyl alkyl perfluoroether with the alkyl radical between 1 and 3 carbons, with an equivalent mass between 1000 and 2600.

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I8

4. Liquid composition according to claims 1 to 3 in which the polar solvent consists of one or a mixture of various from among: methanol; ethanol; iso-propanol; n-propanol; iso-butanol; n-butanol; acetone; methyl ethyl ketone; cyclohexanone; dimethyl formamide; dimethyl sulphoxide.

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5. Liquid composition according to claims 1 to 3 in which the non-polar solvent consists of one or a mixture of various from among: 1.1.2 trifluoro, 1.2 dichloroethane; 1.1 difluoro, 1.2 dichloroethane; 1.1.2 trifluoro trichloroethane; 1.1.1 trichloro bromoethane; 1.1 difluoro, 1.1.2 trichloroethane; pentane; hexane; heptane; benzene; toluene.

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